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EXAMINER	
BHATTACHARYA, SAM	

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2687	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	09/809,066	HINES ET AL.
	Examiner	Art Unit
	Sam Bhattacharya	2687

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 27 October 2004.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-29 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-29 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to amendment filed 10/27/2004.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Petrelis et al. (U.S. Patent 5,204,686).

As to claim 1, Figures 1 and 6 in Petrelis disclose a multiple carrier wave system (see Col. 6, lines 48-59), comprising:

a collector (21 in Figure 1, 79 in Figure 6) including a focal point (see Col. 9, lines 33-37);

a first antenna array (23) sending a first carrier wave signal, said first antenna array including a first path and a second path wherein said first carrier wave signal is distributed into a first distributed signal sent by said first path of said first antenna array and a second distributed signal sent by said second path of said first antenna array such that said first and second distributed signals of said first carrier wave signal arrive at said focal point of said collector in modulo 2Π radian phase coherence with respect to each other (see Col. 6, lines 48-59 and Col. 9, lines 50-67); and

a second antenna array (25) sending a second carrier wave signal, said second antenna array including a first path and a second path wherein said second carrier wave signal is distributed into a first distributed signal sent by said first path of said second antenna array and a second distributed signal sent by said second path of said second antenna array such that said first and second distributed signals of said second carrier wave signal arrive at said focal point of said collector in modulo 2Π radian phase coherence with respect to each other (see Col. 6, lines 48-59 and Col. 9, lines 50-67).

As to claim 2, the Petrelis reference discloses the system of claim 1, further comprising: a first phase shifter (71 in element module 70 of Figure 6) controlling said phase of said first distributed signal of said first carrier wave signal; and a second phase shifter (71 element module 72 of Figure 6) in controlling said phase of said second distributed signal of said first carrier wave signal (see Col. 9, lines 25-28 and lines 50-67).

As to claim 3, the Petrelis reference discloses the system of claim 2, further comprising:

a first amplifier (73 in element module 70 of Figure 6) amplifying said first distributed signal of said first carrier wave signal (see Col. 9, lines 28-32); and a second amplifier (73 in element module 72 of Figure 6) amplifying said second distributed signal of said first carrier wave signal (see Col. 9, lines 28-32).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 4-6, 18-22, 24, 25, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,204,686 to Petrelis et al. in view of Lipsky (LENS-FED ARRAYS, "Microwave Passive Direction Finding", 138-146, John Wiley & Sons, Inc., NY, NY (1987)).

As to claims 4 and 5, the Petrelis reference discloses the system of claims 2 and 1 (respectively). However, it does not disclose said first and second paths of said second antenna array are physically spaced with respect to the focal point of the collector so that said modulo 2Π radian phase coherence of said first and second distributed signals of said second carrier wave signal is achieved; and wherein said first and second paths of said first antenna array are physically spaced with respect to the focal point of the collector so that said modulo 2Π radian phase coherence of said first and second distributed signals of said first carrier wave signal is achieved. The Lipsky reference teaches said first and second paths of said second antenna array are physically spaced with respect to the focal point of the collector so that said modulo 2Π radian phase coherence of said first and second distributed signals of said second carrier wave signal is achieved (see page 138, 2nd paragraph to page 139, 2nd paragraph, and Figure 5-8); and wherein said first and second paths of said first antenna array are physically spaced with respect to the focal point of the collector so that said modulo 2Π radian phase coherence of said first and second distributed signals of said first carrier wave signal is achieved (see page 138, 2nd paragraph to page 139, 2nd paragraph, and Figure 5-8).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Petrelis wherein said first and second paths of

said second antenna array are physically spaced with respect to the focal point of the collector so that said modulo 2Π radian phase coherence of said first and second distributed signals of said second carrier wave signal is achieved; and wherein said first and second paths of said first antenna array are physically spaced with respect to the focal point of the collector so that said modulo 2Π radian phase coherence of said first and second distributed signals of said first carrier wave signal is achieved, as taught by Lipsky, in order to form a beam which is directed in a forward reference direction and whose total radiated power is equal to the sum of the radiated power of the individual signals.

As to claim 6, Petrelis-Lipsky discloses the system of claim 5, further comprising:

a first amplifier (73 in element module 70 of Figure 6, Petrelis) amplifying said first distributed signal of said first carrier wave signal (Petrelis: see Col. 9, lines 28-32); and a second amplifier (73 in element module 72 of Figure 6, Petrelis) amplifying said second distributed signal of said first carrier wave signal (Petrelis: see Col. 9, lines 28-32).

As to claim 18, Figures 1 and 6 in Petrelis disclose a carrier wave system, comprising:

a beam transformer (21 in Figure 1, 79 in Figure 6) including a set of array ports and a set of beam ports (see Col. 9, lines 33-37); and

a first antenna array (23) sending a first carrier wave signal, said first antenna array including a first path and a second path wherein said first carrier wave signal is distributed into a first distributed signal sent by said first path of said first antenna array and a second distributed signal sent by said second path of said first antenna array (see Col. 6, lines 48-59 and Col. 9, lines 50-67).

However, it does not disclose the beam transformer as a reverse-fed Rotman lens that includes a set of array ports and a set of beam ports, and said first and second paths of said first antenna array being connected to first and second array ports of said set of array ports such that a combined energy of said first and second distributed signals of said first carrier wave signal is a maximum at a first beam port. The Lipsky reference teaches a reverse-fed Rotman lens that includes a set of array ports and a set of beam ports (see page 138, 2nd paragraph to page 139, 2nd paragraph, and Figure 5-8), and said first and second paths of said first antenna array being connected to first and second array ports of said set of array ports such that a combined energy of said first and second distributed signals of said first carrier wave signal is a maximum at a first beam port (see page 138, 2nd paragraph to page 139, 2nd paragraph, and Figure 5-8).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Petrelis to comprise a reverse-fed Rotman lens including a set of array ports and a set of beam ports, and said first and second paths of said first antenna array being connected to first and second array ports of said set of array ports such that a combined energy of said first and second distributed signals of said first carrier wave signal is a maximum at a first beam port, as taught by Lipsky, in order to form a beam which is directed in a forward reference direction and whose total radiated power is equal to the sum of the radiated power of the individual signals.

As to claim 19, Petrelis-Lipsky discloses the system of claim 18, further comprising:

a first connecting cable connecting said first path of said first antenna array to said first array port (Lipsky: see page 138, 2nd paragraph to page 139, 2nd paragraph); and a second

connecting cable connecting said second path of said first antenna array to said second array port (see page 138, 2nd paragraph to page 139, 2nd paragraph).

As to claim 20, Petrelis-Lipsky discloses the system of claim 19, wherein said first and second connecting cables are phase determined such that an electrical length of said first distributed signal from said first path of said first antenna array to said first array port is modulo 2Π equal to an electrical length of said second distributed signal from said second path of said first antenna array to said second array port (Lipsky: see page 138, 2nd paragraph to page 139, 2nd paragraph).

As to claim 21, Petrelis-Lipsky discloses the system of claim 18, further comprising: a first phase shifter (71 in element module 70 of Figure 6, Petrelis) controlling said phase of said first distributed signal of said first carrier wave signal; and a second phase shifter (71 element module 72 of Figure 6, Petrelis) in controlling said phase of said second distributed signal of said first carrier wave signal (Petrelis: see Col. 9, lines 25-28 and lines 50-67).

As to claim 22, Petrelis-Lipsky discloses the system of claim 21, further comprising:

a first amplifier (73 in element module 70 of Figure 6, Petrelis) amplifying said first distributed signal of said first carrier wave signal (Petrelis: see Col. 9, lines 28-32); and a second amplifier (73 in element module 72 of Figure 6, Petrelis) amplifying said second distributed signal of said first carrier wave signal (Petrelis: see Col. 9, lines 28-32).

As to claim 24, Petrelis-Lipsky discloses the system of claim 18, further comprising:

a second antenna array (25: Figure 1 in Petrelis) sending a second carrier wave signal, said second antenna array including a first path and a second path wherein said second carrier wave signal is distributed into a first distributed signal sent by said first path of said second

antenna array and a second distributed signal sent by said second path of said second antenna array (Petrelis: see Col. 6, lines 48-59 and Col. 9, lines 50-67), said first and second paths of said second antenna array being connected to third and fourth array ports of said set of array ports such that a combined energy of said first and second distributed signals of said second carrier wave signal is a maximum at a second beam port (Lipsky: see page 138, 2nd paragraph to page 139, 2nd paragraph).

As to claim 25, Petrelis-Lipsky discloses the system of claim 22, wherein said first and second beam ports are the same (Lipsky: see page 138, 2nd paragraph to page 139, 2nd paragraph).

As to claim 29, Petrelis-Lipsky discloses the system of claim 18, wherein a phase shift setting associated with each of the first and second paths of the first antenna array is controlled to selectively maximize the combined energy at any one of two or more beam ports of the Rotman lens (Petrelis: see Col. 9, lines 50-67; Lipsky: see page 139, 4th paragraph that extends into page 140).

6. Claims 7 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,204,686 to Petrelis et al. in view of Mulhauser et al. (U.S. Patent 6,181,293).

As to claim 7, the Petrelis reference discloses the system of claim 1. However, it does not disclose an E-M reflector reflecting said first and second carrier wave signals changing said focal point of said collector. The Mulhauser reference teaches an E-M reflector reflecting said first and second carrier wave signals changing said focal point of said collector ("referring to FIGS. 1-3 and 28, the antenna system includes reflector member 1" (Col. 5, lines 13-14). "The provision of reflector 1 in combination with dielectric lenses 3a and 3b allows the antenna system of certain

embodiments of this invention to receive signals from satellites emitting either horizontally polarized signals or vertically polarized signals" (Col. 5, lines 31-35)).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Petrelis to comprise an E-M reflector reflecting said first and second carrier wave signals changing said focal point of said collector, as taught by Mulhauser, in order to receive horizontally polarized signals or vertically polarized signals.

As to claim 10, Figures 1 and 6 in Petrelis disclose a multiple carrier wave system (see Col. 6, lines 48-59), comprising:

a collector (21 in Figure 1, 79 in Figure 6) including a focal point (see Col. 9, lines 33-37);

a first antenna array (23) sending a first carrier wave signal, said first antenna array including a first path and a second path wherein said first carrier wave signal is distributed into a first distributed signal sent by said first path of said first antenna array and a second distributed signal sent by said second path of said first antenna array such that said first and second distributed signals of said first carrier wave signal are polarized in a first orientation and arrive at said focal point of said collector in modulo 2Π radian phase coherence with respect to each other (see Col. 6, lines 48-59 and Col. 9, lines 6-20 and 50-67); and

a second antenna array (25) sending a second carrier wave signal, said second antenna array including a first path and a second path wherein said second carrier wave signal is distributed into a first distributed signal sent by said first path of said second antenna array and a second distributed signal sent by said second path of said second antenna array such that said first and second distributed signals of said second carrier wave signal are polarized in a second

orientation and arrive at said focal point of said collector in modulo 2Π radian phase coherence with respect to each other (see Col. 6, lines 48-59 and Col. 9, lines 6-20 and 50-67).

However, it does not disclose an orthomode transducer (OMT) extracting from said collector said first and second carrier wave signals polarized in said first and second orientations, respectively. The Mulhauser reference teaches an orthomode transducer (OMT) extracting from said collector said first and second carrier wave signals polarized in said first and second orientations, respectively ("unique orthogonal mode junction 4, having feed area 21, receives linear signals from reflector 1, and separates the horizontally polarized signals from the vertically polarized signals, and places or directs them in corresponding separate parallel plate TEM waveguides 10 and 11 in order to illuminate dielectric lenses 3a and 3b" (Col. 6, lines 9-14)).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Petrelis to comprise an orthomode transducer (OMT) extracting from said collector said first and second carrier wave signals polarized in said first and second orientations, respectively, as taught by Mulhauser, in order to provide beam isolation.

As to claim 11, Petrelis-Mulhauser discloses the system of claim 10, wherein said first and second orientations are orthogonal with respect to each other (Petrelis: see Col. 9, lines 6-20. Mulhauser; "unique orthogonal mode junction 4, having feed area 21, receives linear signals from reflector 1, and separates the horizontally polarized signals from the vertically polarized signals" (Col. 6, lines 9-12). See also Col. 5, lines 32-38).

As to claim 12, Petrelis-Mulhauser discloses the system of claim 11, further comprising:

a first phase shifter (71 in element module 70 of Figure 6, Petrelis) controlling said phase of said first distributed signal of said first carrier wave signal (Petrelis: see Col. 9, lines 25-28 and lines 50-67); and a second phase shifter (71 element module 72 of Figure 6, Petrelis) controlling said phase of said second distributed signal of said first carrier wave signal (Petrelis: see Col. 9, lines 25-28 and lines 50-67).

As to claim 13, Petrelis-Mulhauser discloses the system of claim 12, further comprising:

a first amplifier (73 in element module 70 of Figure 6, Petrelis) amplifying said first distributed signal of said first carrier wave signal (Petrelis: see Col. 9, lines 28-32); and a second amplifier (73 in element module 72 of Figure 6, Petrelis) amplifying said second distributed signal of said first carrier wave signal (Petrelis: see Col. 9, lines 28-32).

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,204,686 to Petrelis et al. in view of Goldsmith et al. (U.S. Patent 5,619,061).

As to claim 8, the Petrelis reference discloses the system of claim 1. However, it does not disclose a band pass filter filtering said first and second carrier wave signals collected by said collector, and a band pass filter filtering said first carrier wave signals collected at said first beam port. The Goldsmith reference teaches a band pass filter filtering said first and second carrier wave signals collected by said collector (see Figures 41, 42 and Col. 17, line 50 to Col. 18, line 23).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Petrelis to comprise a band pass filter filtering said first and second carrier wave signals collected by said collector, and a band pass filter

filtering said first carrier wave signals collected at said first beam port, as taught by Goldsmith, in order to selectively pass desired frequencies and minimize undesirable noise.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,204,686 to Petrelis et al. in view of Gesbert et al. (U.S. Patent Application Publication 2002/0056066 A1).

As to claim 9, the Petrelis reference discloses the system of claim 1. However, it does not expressly disclose the first carrier wave signal sent by said first antenna array is at least one of TDMA, FDMA, and CDMA type. The Gesbert reference teaches the first carrier wave signal sent by said first antenna array is at least one of TDMA, FDMA, and CDMA type ("this should be done when employing a multi-carrier scheme, e.g., OFDMA, FDMA or CDMA in transmitting the data. Of course, the invention can also be used in TDMA" (page 2, col. 2, paragraph [0019], lines 3-6)).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Petrelis wherein the first carrier wave signal sent by said first antenna array is at least one of TDMA, FDMA, and CDMA type, as taught by Gesbert, in order to transmit data at more than one frequency.

9. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,204,686 to Petrelis et al. in view of Mulhauser et al. (U.S. Patent 6,181,293) and further in view of Lipsky (LENS-FED ARRAYS, "Microwave Passive Direction Finding", 138-146, John Wiley & Sons, Inc., NY, NY (1987)).

As to claim 14, Petrelis-Mulhauser discloses the system of claim 11, However, it does not disclose said first and second paths of said first antenna array are physically spaced with respect

to the focal point of the collector so that said modulo 2Π radian phase coherence of said first and second distributed signals of said first carrier wave signal is achieved. The Lipsky reference teaches said first and second paths of said first antenna array are physically spaced with respect to the focal point of the collector so that said modulo 2Π radian phase coherence of said first and second distributed signals of said first carrier wave signal is achieved (see page 138, 2nd paragraph to page 139, 2nd paragraph, and Figure 5-8).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Petrelis-Mulhauser wherein said first and second paths of said first antenna array are physically spaced with respect to the focal point of the collector so that said modulo 2Π radian phase coherence of said first and second distributed signals of said first carrier wave signal is achieved, as taught by Lipsky, in order to form a beam which is directed in a forward reference direction and whose total radiated power is equal to the sum of the radiated power of the individual signals.

As to claim 15, Petrelis-Mulhauser-Lipsky discloses the system of claim 14, further comprising:

a first amplifier (73 in element module 70 of Figure 6, Petrelis) amplifying said first distributed signal of said first carrier wave signal (Petrelis: see Col. 9, lines 28-32); and a second amplifier (73 in element module 72 of Figure 6, Petrelis) amplifying said second distributed signal of said first carrier wave signal (Petrelis: see Col. 9, lines 28-32).

10. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,204,686 to Petrelis et al. in view of Mulhauser et al. (U.S. Patent 6,181,293) and further in view of Goldsmith et al. (U.S. Patent 5,619,061).

As to claim 16, Petrelis-Mulhauser discloses the system of claim 10. However, it does not disclose a first band pass filter filtering said first carrier wave signal polarized in said first orientation and extracted by said OMT; and a second band pass filter filtering said second carrier wave signal polarized in said second orientation and extracted by said OMT. The Goldsmith reference teaches a first band pass filter filtering said first carrier wave signal polarized in said first orientation and extracted by said OMT; and a second band pass filter filtering said second carrier wave signal polarized in said second orientation and extracted by said OMT (see Figures 41, 42 and Col. 17, line 50 to Col. 18, line 23).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Petrelis-Mulhauser to comprise a first band pass filter filtering said first carrier wave signal polarized in said first orientation and extracted by said OMT; and a second band pass filter filtering said second carrier wave signal polarized in said second orientation and extracted by said OMT, as taught by Goldsmith, in order to selectively pass desired frequencies and minimize undesirable noise.

11. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,204,686 to Petrelis et al. in view of Mulhauser et al. (U.S. Patent 6,181,293) and further in view of Gesbert et al. (U.S. Patent Application Publication 2002/0056066 A1).

As to claim 17, Petrelis-Mulhauser discloses the system of claim 10. However, it does not disclose at least one of said first and second carrier wave signals sent by said first antenna array is at least one of TDMA, FDMA, and CDMA type. The Gesbert reference teaches at least one of said first and second carrier wave signals sent by said first antenna array is at least one of TDMA, FDMA, and CDMA type ("this should be done when employing a multi-carrier scheme,

e.g., OFDMA, FDMA or CDMA in transmitting the data. Of course, the invention can also be used in TDMA" (page 2, col. 2, paragraph [0019], lines 3-6)).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Petrelis-Mulhauser wherein at least one of said first and second carrier wave signals sent by said first antenna array is at least one of TDMA, FDMA, and CDMA type, as taught by Gesbert, in order to transmit data at more than one frequency.

12. Claims 23, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,204,686 to Petrelis et al. in view of Lipsky (LENS-FED ARRAYS, "Microwave Passive Direction Finding", 138-146, John Wiley & Sons, Inc., NY, NY (1987)) and further in view of Goldsmith et al. (U.S. Patent 5,619,061).

As to claims 23 and 26, Petrelis-Lipsky discloses the system of claims 18 and 25. However, it does not disclose a band pass filter filtering said first carrier wave signals collected at the first/common beam port. The Goldsmith reference teaches a band pass filter filtering said first carrier wave signals collected at the first/common beam port (see Figures 41, 42 and Col. 17, line 50 to Col. 18, line 23).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Petrelis-Lipsky to comprise a band pass filter filtering said first carrier wave signals collected at the first/common beam port, as taught by Goldsmith, in order to selectively pass desired frequencies and minimize undesirable noise.

As to claim 27, Petrelis-Lipsky discloses the system of claim 24. However, it does not disclose a first band pass filter filtering said first carrier wave signal collected at said first beam

port; and a second band pass filter filtering said second carrier wave signal collected at said first beam port. The Goldsmith reference teaches a first band pass filter filtering said first carrier wave signal collected at said first beam port; and a second band pass filter filtering said second carrier wave signal collected at said first beam port (see Figures 41, 42 and Col. 17, line 50 to Col. 18, line 23).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Petrelis-Lipsky to comprise a first band pass filter filtering said first carrier wave signal collected at said first beam port; and a second band pass filter filtering said second carrier wave signal collected at said first beam port, as taught by Goldsmith, in order to selectively pass desired frequencies and minimize undesirable noise.

13. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,204,686 to Petrelis et al. in view of Lipsky (LENS-FED ARRAYS, "Microwave Passive Direction Finding", 138-146, John Wiley & Sons, Inc., NY, NY (1987)) and further in view of Gesbert et al. (U.S. Patent Application Publication 2002/0056066 A1).

As to claim 28, Petrelis-Lipsky discloses the system of claim 18. However, it does not expressly disclose the first carrier wave signal sent by said first antenna array is at least one of TDMA, FDMA, and CDMA type. The Gesbert reference teaches the first carrier wave signal sent by said first antenna array is at least one of TDMA, FDMA, and CDMA type ("this should be done when employing a multi-carrier scheme, e.g., OFDMA, FDMA or CDMA in transmitting the data. Of course, the invention can also be used in TDMA" (page 2, col. 2, paragraph [0019], lines 3-6)).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Petrelis-Lipsky wherein the first carrier wave signal sent by said first antenna array is at least one of TDMA, FDMA, and CDMA type, as taught by Gesbert, in order to transmit data at more than one frequency.

Response to Arguments

14. Applicant's arguments filed 10/27/2004 have been fully considered but they are not persuasive.

With respect to claims 1 and 18, Applicant argues that Petrelis fails to teach or suggest a first antenna array and a second antenna array, each of which are adapted to distribute and process distributed signals through a first and second path such that the distributed signals of the first carrier wave signal arrive at the focal point of the collector in modulo 2Π radian phase coherence with respect to each other.

Examiner respectfully disagrees. The signal distribution networks 23 and 25 in FIG. 1 are selectively connected to antenna element feeds 11 and 19. Antenna feed elements 11 and 19 are electromagnetically coupled to beam transformer 21. Each of the feed elements forms a small antenna and the feed elements are arranged in a phased array radiating system. See col. 4, lines 38-45. Therefore, the signal distribution networks can clearly be considered antenna arrays. The embodiment in FIG. 6 also shows output from amplifiers connected to the input of an associated feed horn, 75. The output of the particular amplifier may be combined with the outputs of the other amplifiers in a beam transformer 79. The individual feed horns are thus grouped together in a geometrical antenna arrangement, as shown in FIG. 7. See col. 9, lines 31-

41. Accordingly, by grouping together the feed horns, the antenna arrays are adapted to distribute and process distributed signals through a first and second path such that the distributed signals of the first carrier wave signal arrive at the focal point of the collector in modulo 2Π radian phase coherence with respect to each other, as recited in claims 1 and 18.

With respect to the dependent claims, Applicant argues that Lipsky, Mulhauser et al., Goldsmith and Gesbert et al. fail to make up for the deficiencies of Petrelis as discussed with respect to claims 1, 10 and 18. However, Examiner maintains that Petrelis already discloses the limitations of claims 1, 10 and 18, as discussed above.

With respect to claims 10 and 18, Applicant further argues that the Office Action fails to establish a *prima facie* case of obviousness because of a lack of motivation to combine the references. Specifically, Applicant argues that a *prima facie* case of obviousness has not been established due to lack of citation as to where in Petrelis or any secondary document the suggestions or motivations to combine are expressly stated or suggested.

Examiner respectfully disagrees with Applicant's assertion of lack of motivation to combine the references. As pointed out by Applicant, M.P.E.P. 2143 states that the suggestion or motivation to combine references can be either in the art or <u>knowledge generally available to one of ordinary skill in the art</u>. Hence, the suggestions or motivations to combine are not required to be expressly stated or suggested in the references. As to the specific motivations stated in the rejections of claims 10 and 18, one of ordinary skill in the art would have known that providing beam isolation is advantageous for reducing interference on communications, and forming a beam in a forward reference direction is advantageous in directing the beam toward a specific target, for example.

Conclusion

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Bhattacharya whose telephone number is (571) 272-7917. The examiner can normally be reached on Weekdays, 9-6, with first Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester G. Kincaid can be reached on (571) 272-7922.

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sb

4/18/05

LESTER G. KINCAID
PRIMARY EXAMINER